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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/546,227	04/10/2000	Kazuhiko Koike	PM268032	2762

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Nixon & Vanderhye P.C.  
Larry S. Nixon  
1100 North Glebe Road  
8th Floor  
Arlington, VA 22201

EXAMINER
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JOHNSON, EDWARD M

ART UNIT	PAPER NUMBER
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1754

DATE MAILED: 08/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/546,227

Applicant(s)

KOIKE ET AL.

Examiner

Edward M. Johnson

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 July 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 73-78,80-99,102 and 103 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 87-93 and 103 is/are allowed.
- 6) ☒ Claim(s) 73-78,80-86,94-99 and 102 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 7/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 73, 76-77, and 80-83 are rejected under 35 U.S.C. 102(b) as anticipated by Guile et al. US 5,716,899.

Regarding claim 73, Guile '899 discloses catalyst comprising a pore-impregnated ceramic body (see abstract).

Regarding claim 80, Guile '899 discloses cordierite, Si, and Al (see column 3, lines 27-38 and 46).

Regarding claims 76-77, 81-83 Guile '899 discloses vanadium oxide and copper filling the pores (see column 7, lines 44-48) and ceria (see column 3, lines 27-38).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the

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art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 73, 76-86, 97, and 102-103 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichii in view of Beauseigneur et al. 5,346,722.

Regarding claims 73 and 77-86, Ichii '885 discloses cordierite honeycomb (see column 3, lines 43-47) with a lattice defect with oxygen vacancies and oxygen storing capability (see column 1, lines 63-66; the term "capability" indicating oxygen may or may not be stored), a composition of more than 48% by weight (see column 5, lines 29-30), and a honeycomb catalyst carrier without a coating (see column 1, lines 17-19), heating to form microcracks, and reheating (see column 4, lines 60-67).

Ichii '885 fails to specifically disclose ceria, catalytic metals, and pore size of 100 nm or less.

Beauseigneur '722 discloses ceria (see abstract), transition metals (see column 6, line 29 and column 7, lines 65-68), and pore size of less than 5 microns (see column 3, lines 67-68).

It is considered that it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the pore diameter, ceria, and metals of Beauseigneur in the honeycomb cordierite of Ichii because Beauseigneur discloses his

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ceria as particularly preferred (see column 6, lines 54-55), in a method of improving thermal shock resistance (title), in a honeycomb cordierite (see column 1, lines 5-24), to support catalyst metals for use as catalyst (see column 7, lines 65-68).

Regarding claims 76-86, Beauseigneur '722 discloses pore diameter less than 5 microns (see column 3, lines 67-68) and catalyst metals (see column 7, lines 65-68), including noble metals (see column 8, lines 65-66).

Regarding claim 77, it is considered that it would have been obvious to one of ordinary skill in the art at the time the invention was made to use Pt as a catalyst metal in view of Applicant's admission that such catalysts are "widely used" and "conventional" (see specification, page 1, second full paragraph).

Regarding claim 78, it is considered that it would have been obvious to one of ordinary skill in the art at the time the invention was made to use pores of 0-50 microns because Ichii discloses microcracks on particles of 50 microns, which disappear (see abstract and column 8, lines 52-55).

Regarding claim 97, Ichii discloses mixing and pouring, both of which would cause vibration in a liquid.

Regarding claim 102, Ichii discloses  $2\text{MgO} \cdot 2\text{AlO}_3 \cdot 5\text{SiO}_2$  (see column 5, line 29).

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5. Claims 94, 96, and 98-99 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichii '885 as applied to claim 73 above, and further in view of Knapton et al. 4,189,405.

Regarding claim 94, Ichii fails to disclose CVD or PVD.

Knapton '405 discloses chemical vapour deposition (see column 5, lines 11-19).

It is considered that it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the CVD of Knapton in the catalyst of Ichii because Knapton discloses the CVD in an intermetallic catalyst (title) to form an alumina layer on alloys which do not contain sufficient aluminum to form their own alumina layer (see column 5, lines 11-14) and to give the requisite compound (see column 2, lines 48-51).

Regarding claim 96, Knapton discloses water or an organic solvent (see column 2, lines 56-58), which would obviously, to one of ordinary skill, include organic solvents that have a higher surface tension than water.

Regarding claims 98-99, Knapton discloses impregnation by heating a mixture of chemicals to produce the catalyst (see column 2, lines 40-47).

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6. Claim 95 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ichii '885 as applied to claim 73 above, and further in view of Abe et al. 5,489,865.

Regarding claim 95, Ichii fails to disclose supercritical conditions.

Regarding claim 95, Abe '865 discloses drying gel under supercritical condition (see column 3, lines 48-50).

It is considered that it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the supercritical conditions of Abe in the catalyst process of Ichii because Abe discloses the supercritical conditions in a catalyst process (title) to obtain a noble metal-dispersed alumina precursor sol or gel (see column 3, lines 47-48).

7. Claims 74-75 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guile '899.

Guile discloses 0.6% Pt metal.

Guile fails to disclose an average distance between particles of 0.1-100 nm.

It is considered that it would have been obvious to one of ordinary skill in the art at the time the invention was made to select an average distance between particles of 0.1-100 nm in the catalyst of Guile because Guile discloses an average support particle diameter of 2-6 microns (see column 6, lines 13-17),

which would obviously, to one of ordinary skill, suggest an average distance of 0.1-100 nm since it is within a range that smaller than the diameter and greater than the disclosed pore size of 2-15 angstroms.

***Allowable Subject Matter***

8. Claims 87-93 and 103 are allowed.
9. The following is a statement of reasons for the indication of allowable subject matter: It also would not have been obvious to one of ordinary skill in the art at the time the invention was made to fire the honeycomb directly after heating to remove binder in the process of the instant claims 87-93.

***Response to Arguments***

10. Applicant's arguments filed 4/5/04 have been fully considered but they are not persuasive.

It is argued that at page 7 of the final Office Action... supported on the substrate. This is not persuasive because a material is supported "directly" whether or not the support is layered, so long as the catalyst material contacts another material, which is considered the support thereof. Applicant does not appear to specifically define "direct" by way of the specification or otherwise to exclude the cited prior art direct support.



It is argued that in rejecting claim 80... lines 27-38 and 46. This is not persuasive because honeycomb structure is disclosed throughout Guile (see column 4, lines 25-40) and also because Applicant appears to admit that cordierite, silica, and alumina are disclosed as well as such "bodies made up of iron group metals", in Applicant's cited passage of the reference. It is again noted by the Examiner that "replacing" appears to be a process step limitation rather than a product limitation and the presence of all the elements of the claimed product within the prior art is considered to meet a product claim whether or not a replacing process step is disclosed. Applicant does not appear to have responded to this position, which was asserted by the Examiner in the previous Office Action.

It is argued that at page 3 of the final Office Action... without a coating. This is not persuasive because Applicant appears to admit that no coating is disclosed as required by the negative limitation of the claim.

It is argued that in rejecting claim 78... which disappear. This is not persuasive because cracks in a particle of 50 microns must necessarily be less than 50 microns, since the cracks therein cannot be bigger than the particle itself. Similarly, a particle of 30 microns would contain the same inherent feature.

It is argued that in rejecting claim 97... vibration in a liquid. This is not persuasive because Beauseigneur discloses mixing and immersing, which would also cause at least some vibration.

It is argued that in rejecting claim 96... surface tension would have been obvious. This is not persuasive because Applicant's assertion that a lower surface tension is disclosed appears incorrect (applicant is invited to point out where such a disclosure is made) and because Knapton discloses water or an organic solvent (see column 2, lines 56-58), which would obviously, to one of ordinary skill, include organic solvents that have a higher surface tension than water.

#### ***Conclusion***

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edward M. Johnson whose telephone number is 571-272-1352. The examiner can normally be reached on M-F 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley S. Silverman can be reached on 571-272-1358. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-0987.

EMJ

August 23, 2004

A handwritten signature in cursive script, appearing to read 'EMJ', followed by a horizontal line.